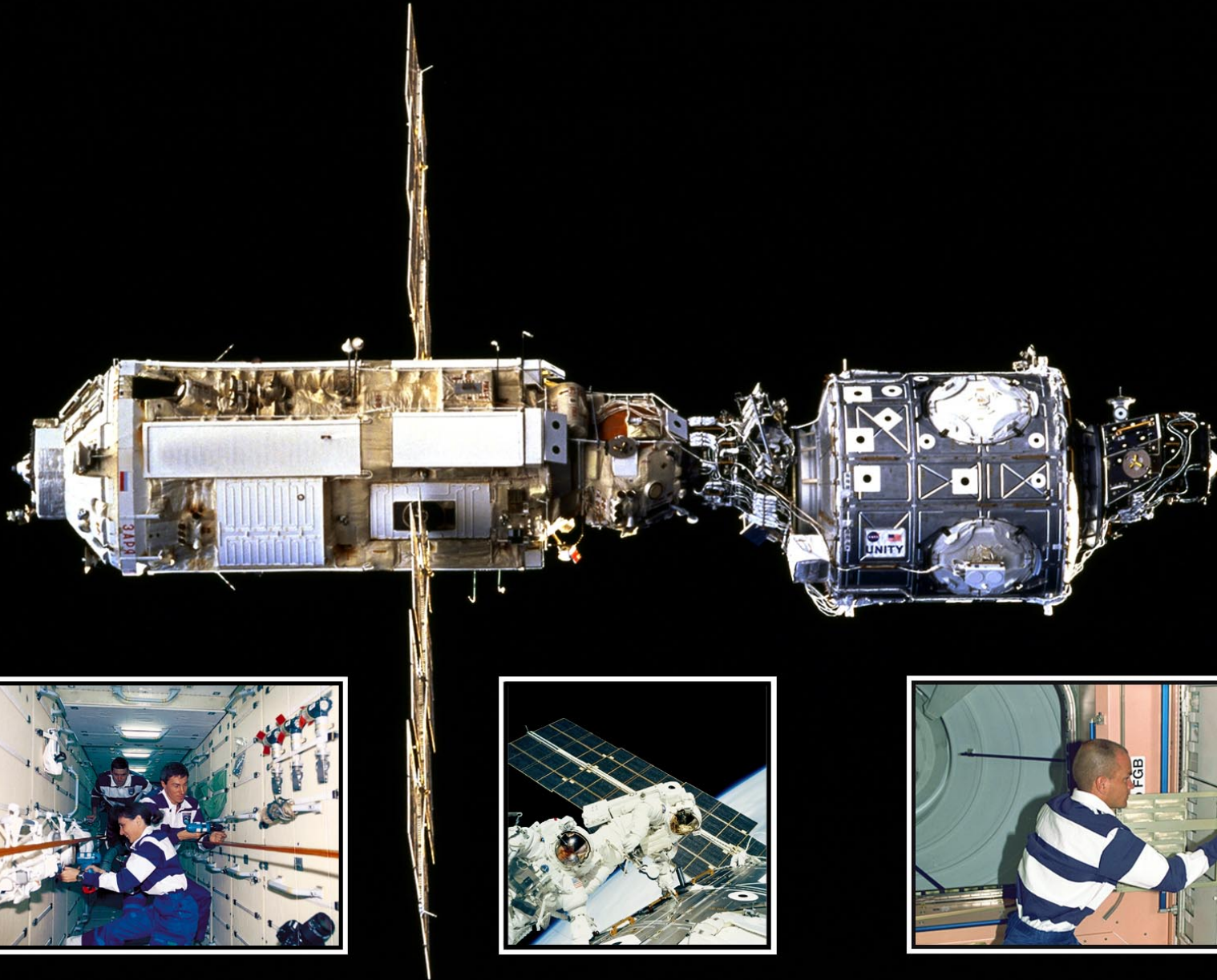




National Aeronautics and
Space Administration

International Space Station Assembly Begins





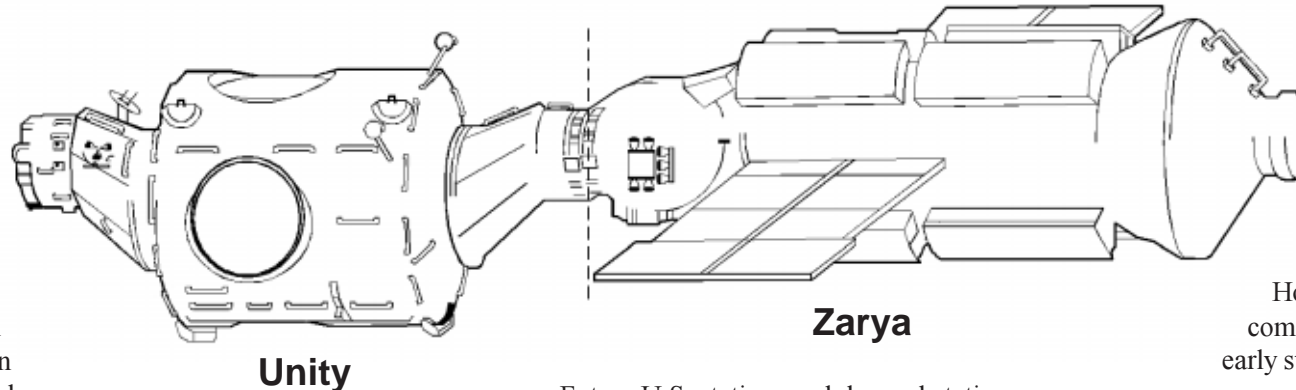
International Space Station Assembly Begins

Assembly on orbit of the International Space Station began with the launch of the U.S.-owned, Russian-built Zarya control module on November 20, 1998, from the Baikonur Cosmodrome, Kazakstan. The launch of the Space Shuttle *Endeavour* from the Kennedy Space Center, FL, followed on December 4, 1998, carrying the U.S.-built Unity connecting module. *Endeavour*'s crew attached Unity and Zarya during a 12-day mission to begin the station's orbital construction.

The 42,600 pound pressurized Zarya control module provides the station's initial propulsion and power. Zarya, which means "Dawn" when translated into English, now provides orientation control, communications and electrical power to the passive Unity module. The third component, a Russian-provided crew living quarters and early station core known as Zvezda, is planned to be put in orbit in fall 1999. Zvezda, which means "Star" in English, will enhance or replace many functions of Zarya.

The Zarya module is 41.2 feet long and 13.5 feet wide at its widest point. It has an operational lifetime of at least 15 years. The module is named Zarya (Dawn) because its launch signaled the dawn of a new era of international cooperation in space exploration.

The Space Shuttle *Endeavour* rendezvoused with Zarya, permanently attaching the U.S.-built Unity module. Unity, which is made of aluminum, is a six-sided connecting module and passageway. It lays a foundation for all future U.S. International Space Station modules. A berthing port is located on each of its six sides, one of which is already attached to Zarya.



Future U.S. station modules and station components will attach to the remaining five ports. Unity is the first of three such connecting modules to be built for the Station.

Fluids, environmental control and life support systems, electrical and data systems are routed through Unity to supply space station work and living areas with essential resources. More than 50,000 mechanical items, 216 lines to carry fluids and gases, and 121 internal and external electrical cables using six miles of wire are installed in the Unity node. Two conical docking adapters were attached to each end of Unity prior to its launch aboard *Endeavour*. The adapters, called pressurized

mating adapters (PMAs), allow the docking systems used by the Space Shuttle and by Russian modules to attach to the node's hatches and berthing mechanisms. One of the conical adapters now permanently attaches Unity to Zarya, while the other provides a Shuttle docking port. Unity and the two mating adapters weigh about 25,600 pounds.

Attached to the exterior of the mating adapter that permanently attaches Unity to Zarya are computers, which provide early command and control. Unity also is outfitted with an early communications system that allows data, voice and low data rate video with Mission Control, Houston, to supplement Russian communications systems during the early station assembly activities.

Small Photos on Front:

- (1) The U.S. and Russia working together: Astronauts Robert Cabana and Nancy J. Currie with Cosmonaut Sergei Krikalev inside Zarya.
- (2) Astronauts Jerry L. Ross (left) and James H. Newman, mission specialists, work together on the last of the Extravehicular Activities of the mission. One of the Zarya solar panels is in the background.
- (3) Astronaut Rick Sturckow working inside Unity.